Term 1

Lesson	Activities	Resources	Differentiation	NC Link	NC Assessment	Careers / Citizenship
1	**Introduction to Control with Logo** Whole-class brainstorm about control technology – take examples and see how they work. Introduce idea of programming machines to carry out specific task. Difference between complexity of human brain and computer – computer must have exact commands. Use pupil as turtle and get others to give commands to move around, emphasizing forward, back, left and right, as in Logo. Introduce Logo and explain its roots. Write basic terminology on board and relate to previous activity. **forward** *n* (where *n* = number of steps) **back** *n* **right** *x* (where *x* = angle of turn) **left** *x* Give instructions to load prepared file and practice commands through maze. Stop class and point out abbreviated commands: fd, bk, rt, lt. Homework: Logo maze sheet to consolidate classroom learning.	• Microworlds Pro • Prepared maze file • Maze homework sheet	Extension: pupils create own bitmap (maze/ golf course etc.) and guide turtle through it.	POS 2b, 2d, 4b, 5d	The teacher should make sure that the pupils are aware of, and can use the appropriate terminology: Forward Back Left Right **Level 3** Using sequences of instructions to control turtles and achieve specific outcomes.	Programming

2	**Creating shapes and following programs** Make sure that the commands are on the board and that pupils know what they do. Introduce the **pd** (pen down), **pu** (pen up) and **cg** (clear graphics) commands. It is essential to type **pd** to make the turtle draw the lines. Pupils draw shapes – square, repeated squares of different sizes, follow given programs and create their own pictures using only the Logo commands they have learned. Be aware that there will be a certain amount of mistakes made with spelling, spacing etc. Allow time for creativity - Logo encourages active learning. Recap and discuss the problem of having to continually type in commands. Homework: Logo puzzle sheet	• Microworlds Pro • Puzzle homework sheet	Extension activities – Working in pairs, one student writes Logo commands for another to draw on paper, then test it on computer. Experiment with steps and angles to produce a circle.	POS 2b, 2c, 2d	Make sure pupils can use and understand all new terminology. Reinforcement through homework task. **Level 4** Using ICT to control events in a predetermined manner…exploring patterns and relationships.	Co-operation skills

3	**Repeat Commands** Revise abbreviated Logo commands and introduce **repeat** concept. Make sure that pupils know how to find the square bracket. Pupils start by using repeat commands to create square, then move on through other regular polygons - they need to be able to work out what angle they should use to get a regular polygon. The heptagon is especially tricky: advise them to experiment around 51 to 52°. Experimentation with spirals. Homework: create a program using repeat commands to draw given shapes.	• Microworlds Pro • Homework sheet	Extension activity – experiment with SETPENCOLOR commands.	2a, 2b, 2c, 2d	Ensure pupils grasp new concepts and terminology. **Level 5** Pupils create sets of instructions to control events and understand the need to be precise when framing and sequencing instructions.	
4	**Procedures** Good programming technique dictates that large tasks should be broken down into small 'modules' where each module performs one small, simple task. This approach is called "Top-down Design". In Logo this is achieved using structures called "Procedures". Introduce procedure technique and arbitrary naming conventions. Editing procedures. Pupils combine Logo skills to create procedures to draw sets of shapes, combining them to create 'programs'. Homework: 'Debugging' sheet to spot and correct mistakes in given programs.	• Microworlds Pro • 'Debugging' homework sheet	Extension activity – SETPOS	2a, 2b, 2c, 2d	**Level 5** to **Level 6** Pupils develop, try out and refine sequences of instructions to control events and show efficiency in framing these instructions.	

5	**Variables** A variable can be thought of as a 'container' for different values. You can change the value of a variable at any time. Introduce pupils to creating shapes with variables: drawing sets of shapes with different dimensions. Combine variables with procedures to create more complex programs. Homework: practice recognizing and creating variables.	• Microworlds Pro • Variables homework sheet	Variety of help sheets available to prompt pupils' thinking about variables.	2a, 2b, 2c, 2d	Up to and including **Level 7** Pupils design ICT-based models and procedures with variables to meet particular needs.	
6 7	**Project** Pupils have 2 lessons (plus homework time) to work through the process of choosing a project, designing it, building up the procedures and debugging their work. The project must be properly documented and use a specified number of elements and Logo skills, to be outlined at beginning of lesson 6.	• Microworlds Pro • Prompt sheets for revision of skills	Additional support and advice available from teacher.	2a, 2b, 2c, 2d, 4d,	Summative assessment.	Project management